



**S·A·R·R·A·H**

Services for Australian  
Rural and Remote Allied Health

**Position Paper**

# **Telehealth and Allied Health**

**July 2012**

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## About SARRAH

SARRAH is nationally recognised as a peak body representing rural and remote allied health professionals working in both the public and private sector.

SARRAH's representation comes from a range of allied health disciplines including but not limited to: Audiology, Dietetics, Exercise Physiology, Occupational Therapy, Optometry, Oral Health, Pharmacy, Physiotherapy, Podiatry, Psychology, Social Work and Speech Pathology.

These allied health professionals provide a range of clinical and health education services to individuals who live in rural and remote communities. Allied health professionals are critical in the management of their health consumers' health needs, particularly with chronic disease and complex care needs.

The allied health professional, particularly in rural and remote areas, is well versed in the interdisciplinary and team approach to health care, especially in management of chronic disease and to improve health behaviour.

The purpose of this paper is to present examples of telehealth to access allied health services across regional, rural and remote Australia.

## Telehealth and Allied Health

Health consumers in remote, regional and outer metropolitan areas face greater barriers to accessing specialist services than those in city areas. Remote and small rural communities do not necessarily have the population critical mass to support all or any allied health services to be located within their local community. Consequently access to services delivered by the different allied health professions is limited. This is particularly true where the allied health service may be a specialty area within a profession, for example paediatrics, neurology, rheumatology or diabetes. Telehealth can assist health consumers to overcome these barriers; enabling access to specialist services sooner with lower travel costs and better continuity of care.

Telehealth refers to the delivery of health services in circumstances involving a separation in location and/or time, using Information and Communication Technologies (ICT). Methods of delivering telehealth services include telephone, email, videoconferencing and the use of the internet.<sup>1</sup>

Consequently, telehealth involves the delivery of health services via ICT when the health consumer and the health service provider are not in the same location and where the interaction may not be in real time. Telehealth should not be used as a substitute for the provision of face to face health care by a health professional to the health consumer. If direct interaction is available or better health outcomes would be achieved by face to face contact between the health professional and health consumer then this is the preferred health service delivery model.

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<sup>1</sup> Loanne M, Wootton R. A review of telehealth. *Med Princ and Prac* 2001; 10(3): 163-170

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## Key Enablers of Telehealth

### 1. Access to Infrastructure to support Telehealth

- National Broadband Network with access to a safe, secure and high speed system is a key component to enabling telehealth to operate effectively and efficiently. Allied health professionals, like their medical counterparts, require access to inexpensive, reliable high speed cabled and wireless broadband.
- Hardware such as a mobile phone, computer, videoconferencing infrastructure and devices are necessary for monitoring/examining/assessing health consumers' movement and function via ICT. The specific requirements will depend on both the health status of the consumer and on the specific skills being required of the allied health professional. For example, a head mounted video camera to enable a consumer to walk through his/her house to enable an occupational therapist to undertake a home assessment, or falls risk analysis. Other ICT equipment required may include a computer and/or smart phone.
- Software to record health consumer responses, for example speech and/or movement analysis. Voice over Internet Protocol (VoIP)<sup>2</sup> type software such as Skype is also an option for enabling valid videoconferencing where such facilities may not otherwise exist.

### 2. Personally Controlled Electronic Health Records (PCEHR)

The PCEHR system will potentially be able to sustain a very different health care system than the one we experience today. The PCEHR aims to be able to link health care providers, both individuals (Clinicians) and organisations to the health consumer who has control of his/her health record. It must be noted that in order to deliver comprehensive team based health care, access to the PCEHR must be available to all clinicians who form a part of the health consumer's healthcare team.

### 3. Financing

In 2010 the Australian Government announced the *Connecting Health Services with the Future: Modernising Medicare by Providing Rebates for Online Consultations* initiative. This initiative recognised the need to facilitate rural and remote health consumers' access to health services. From 1 July 2011 people in remote, regional and outer metropolitan areas of Australia were able to access telehealth allowing health consumers to have video consultations with a range of medical specialists. This initiative provides health consumers with easier access to specialists, without the time and expense involved in travelling to major cities.

Whilst this initiative recognises the need for specialist medical services, it does not allow access by rural and remote communities to the special skills and health services provided by allied health professionals that are not accessible by any other mechanism.

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<sup>2</sup> **Voice over IP (VoIP)** is a family of technologies, methodologies, communication protocols, and transmission techniques for the delivery of voice communications and multimedia sessions over Internet Protocol (IP) networks, such as the Internet. Other terms frequently encountered and often used synonymously with VoIP are *IP telephony*, *Internet telephony*, *voice over broadband (VoBB)*, *broadband telephony*, and *broadband phone*.

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## 4. Education and training

It must not be assumed that allied health professionals working in rural and remote communities will be automatically able to utilise telehealth technology. There must be a culture within the employing organisation or private practice that supports its usage and provides access to the necessary training and support. Such as:

- Funding support to purchase the necessary equipment and software and to access training
- Access to the hardware (equipment).
- Access to the software which enables the support of telehealth including the use of email, instant messaging, VoIP technology such as Skype, electronic health consumer records, clinical services including assessment, diagnosis, treatment and education.
- Protocols around the use of ICT including record keeping, privacy and confidentiality.

## Benefits of Telehealth

There are benefits for the health consumer, allied health professional and national health system.

### 1. For the health consumer

A health consumer can be assessed and diagnosed by an allied health professional through the use of ICT. Telehealth also provides opportunity for a remotely located allied health professional to provide treatment, manage and monitor and deliver education about the health consumer's case. Queensland University has been at the forefront of significant research providing evidence of the effectiveness of the use of telehealth and tele-rehabilitation methods for allied health. A list of publications by researchers at this university is provided at attachment 1.

The timing of the intervention by an allied health professional can be in real time or asynchronous.

## Examples of Telehealth models of allied health service delivery

### a. Self-care by the health consumer.

This form of telehealth involves the consumer taking direct responsibility for their own health literacy about their health condition. The most common form of self-care involves the health consumer interacting with the computer to access information about their condition. This may be through not-for-profit non-government support organisations such as the Heart Foundation, Arthritis Australia or Diabetes Australia. It may involve the health consumer seeking information from an allied health profession's specific website. Government agencies such as Medicare Australia, Department of Veterans Affairs and *Health Insight* also provide health information for consumers. It is the responsibility of governments, health professional associations and service providers to ensure that the information published on such websites is accurate and up to date.

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## **b. Clinician and health consumer**

Health consumers are able to interact with the allied health clinician in either real or asynchronous time.

Asynchronous examples may include the health consumer to either:

- Seek information or provide a progress report on their self-care and self-management to the allied health professional via email.
- Wear a wireless monitoring and transmitting device such as a heart rate monitor that records, stores and sends information about their health status or activity level via ICT. The allied health professional is then able to access this information whenever applicable.
- Leave a message for the allied health professional by email or through an online chat forum such as Microsoft Messenger, Skype or Yahoo.

Real time examples may include teleconferencing or videoconferencing.

### Teleconference

An allied health professional is able to work with a health consumer through the use of telephone technology. Such telehealth requires the use of a landline, mobile phone or VoIP technology such as Skype or Yahoo. The telehealth service may be individual or team based care involving either a single profession or multi-professional health care team.

### Videoconference

Videoconferencing is the most commonly accepted form of telehealth. Generally it will involve the health consumer at one end and the allied health clinician at the other. Such videoconferencing can occur through telehealth facilities that have been established between health facilities where the health consumer is located within the telehealth room of their local health facility. The allied health professional can be utilising telehealth facilities at their place of work, remote to the health consumer. The most common form of videoconference is one to one. However, the technology does make possible multi-professional team based care for the health consumer. For example children with disabilities such as autism spectrum disorder or health consumers with diagnosed mental health or chronic disease conditions may be linked with a number of professionals involved in their care.

ICT advances in recent years have expanded the opportunity to undertake telehealth less formally and often in the home for the health consumer. Such videoconferencing requires access to a personal computer (desktop or laptop) a teleconferencing camera and the use of software such as Skype. In order for such teleconferencing to be effective and efficient access to good bandwidth and download is essential. The rollout of the National Broadband Network is a key to expanding the scope of this form of practice to remote areas of Australia.

In home allied health services available through VoIP technology such as Skype/videoconference include (but are not limited to):

- speech assessment and treatment(Speech Pathologist);

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- swallowing assessment and treatment (Speech Pathologist)
  - counselling (Psychologists, Social Workers and Occupational Therapists);
  - home visits and assessments (Occupational Therapist);
  - exercise program assessment and review (Occupational Therapists, Exercise Physiologists and Physiotherapists); and
  - medication assessment and review (Pharmacists).

Videoconferencing may involve a local support person e.g, allied health assistant, rehabilitation worker, community nurse.

#### **c. Clinician-carer**

The delivery of telehealth provides for interaction between the allied health clinician and carers for the health consumer. This is particularly important where the health consumer has a chronic complex condition requiring a carer or where the health consumer is a minor and parents are responsible for treatment and management of the child's condition.

#### **d. Clinician to clinician**

Telehealth enables the interaction between clinicians involved in the care of a health consumer. For example experienced and/or specialist allied health professionals can attend team meetings to discuss care plans, exchange information and provide training. It is also possible to supervise and/or mentor a clinician, an allied health assistant or other worker who may be locally based to the health consumer, or is otherwise involved in the health consumer's care.

The locally based clinician is up-skilled, the health consumer has access to the level of care required and ongoing treatment/management is provided between visits by the specialist professional. The interaction between clinicians can be clinicians of the same profession or from a different profession. The latter is particularly relevant where access to the skills provided by the different allied health professions is not available to the health consumer. Allied health professionals that are accessible by the health consumer can potentially obtain/train in/be advised by a professional from another allied health profession - this is an example of trans-disciplinary practice.

#### **e. Clinician and health consumer to clinician/specialist**

Telehealth allows health consumers located in rural and remote areas to access specialist clinics based within metropolitan regions where the population base and health workforce infrastructure supports specialist multi-professional health care teams (e.g. neurosurgery). Health consumers awaiting specialist interventions such as surgery can undergo allied health triage, pre-surgical interventions, or assessment with regards to need for surgery, without having to travel to the metropolitan clinic through telehealth. Health consumers access the service through locally based allied health professional, reducing the cost and time required to travel to the specialist clinic. The local allied health professional undertakes the triage type testing (for example neurotesting for the neurosurgical clinic – sensation mapping, reflexes, myotomes etc) on the health consumer under the direction, guidance and questions of the advanced practice allied health professional based in the specialist clinic.

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As well as reducing waiting lists, enabling appropriate referral to surgery or allied health intervention for the health consumer, reducing costs and time of travel, this form of telehealth enables networking between local and tertiary clinicians, building skills and capacity in the local area.

## **2. For the health system**

### Cost and time benefit

There is both a cost and time benefit in delivering allied health services via telehealth rather than taking the health consumer to the service or the health consumer not accessing services at all.

Travel and time costs for the consumer to be taken to a specialist allied health practitioner (for example an Occupational Therapist who specialises in rheumatology, a Speech Pathologist who specialises in swallowing disorders). Locally based AHPs, allied health assistants or other workers may be with the consumer in the remote location and video conference with a specialist AHP located in a metropolitan or large regional centre.

For effective and efficient service provision it is important that allied health professional services be recognised by the Australian Government in enabling access to the National Broadband Network. Also, rebates should be introduced for services through the Medical Benefits Scheme (MBS) to compensate the allied health professional for the services provided.

### Remote supervision of community based health service delivery personnel

Allied health services may be delivered to a rural or remote community via a fly in fly out / drive in drive out (FIFO/DIDO) allied health workforce working within a hub and spoke model of service. The disadvantage for the community of such a model of health care is that access is not available on a day to day basis, often with weeks/months between visits by professional clinicians. However, in many cases, health consumers can continue to receive necessary treatment and rehabilitation services through the use of locally trained, onsite allied health assistants, rehabilitation assistants, community health workers and/or aboriginal health workers. Workers delivering allied health programs developed for the health consumer by clinicians that are not locally based require supervision. Remote supervision is able to be delivered via ICT. Telehealth also enables a vocationally trained, onsite therapy assistant access to the clinician who has assessed the health consumer and developed a program of care.

## **3. For the clinician**

### Education and training

Rural and remote allied health professionals experience limited access to professional development, both formal and informal. This includes access to training delivered by their employers, short courses, workshops and/or formal training delivered by the tertiary sector. ICT can provide access to online training for rural and remote allied health professionals or allied health assistants / other relevant workers. Real time training can be delivered via teleconference and satellite technology. The worker can receive such training through computer, television or videoconferencing facilities.

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Online learning packages, access to journals and discussion forums are other ways of accessing education and training that may be delivered in real time or asynchronous (where the training is available to the health professional at a time convenient to them, rather than 'live' or at a specific time).

#### Clinical supervision and mentoring

For many allied health professionals working in rural and remote communities, clinical supervision delivered by a clinician with experience from the same profession is not available onsite. Mentoring may be provided by a person from a different profession; however an appropriate mentor, matched to meet the mentoring needs of the clinician may also be located in another health facility or even in a different state. ICT provides an opportunity for a rural and remote allied health professional to undertake formal clinical supervision to enhance and develop their professional skills, and access mentoring to overcome professional and personal isolation through videoconference, teleconference, email and other online forums.

### **Conclusion**

Telehealth provides a viable means of accessing allied health services not otherwise available to health consumers in rural and remote areas of Australia. Telehealth should not be used as a substitute for the provision of face to face health care by a health professional to the health consumer. If direct interaction is available or better health outcomes would be achieved by face to face contact between the health professional and health consumer then this is the preferred health service delivery model. In order to provide an efficient and effective service, telehealth must be enabled through the provision of hardware, software, financing, education and training and access to the National Broadband Network.

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## Appendix 1

Research publications providing evidence of efficiency and effectiveness of telehealth and telerehabilitation by allied health professionals from 2002-2011

1. Constantinescu, G., Theodoros, D., Russell, T., Ward, E., Wilson, S., & Wootton, R. (in press). Treating disordered speech and voice in Parkinson's disease online: A randomised controlled trial. *International Journal of Language and Communication Disorder*.
2. Constantinescu, G.A., Theodoros, D.G., Russell, T.G., Ward, E.C., Wilson, S.J., & Wootton, R. (2010). Home-based speech treatment for Parkinson's disease delivered remotely: A case report. *Journal of Telemedicine and Telecare*, 16, 100-104.
3. Waite, M., Theodoros, D., Russell, T., & Cahill, L. (2010). Assessment of Children's Literacy via an Internet-Based Telehealth System. *Telemedicine Journal and E-Health*, 16(5), 564-575. doi: 10.1089/tmj.2009.0161
4. Waite, M., Theodoros, D., Russell, T., & Cahill, L. (2010). Internet-Based Telehealth Assessment of Language Using the CELF-4. *Language Speech and Hearing Services in Schools*, 41(4), 445-458. doi: 10.1044/0161-1461(2009/08-0131)
5. Constantinescu, G., Theodoros, D., Russell, T., Ward, E., Wilson, S., & Wootton, R. Assessing disordered speech and voice in Parkinson's disease: A telerehabilitation application. *International Journal of Language and Communication Disorders*, Early Online Article, 1-15.
6. Hill, A., Theodoros, D., Russell, T., & Ward, E. (2009). The Redesign and Re-evaluation of an Internet-Based Telerehabilitation System for the Assessment of Dysarthria in Adults. *Telemedicine Journal and E-Health*, 15(9), 840-850. doi: 10.1089/tmj.2009.0015
7. Hill, A., Theodoros, D., Russell, T., & Ward, E. (2009). Using telerehabilitation to assess apraxia of speech in adults. *International Journal of Language & Communication Disorders*, 44(5), 731-747. doi: 10.1080/13682820802350537
8. Hill, A., Theodoros, D., Russell, T., Ward, E., & Wootton, R. (2009). The effects of aphasia severity on the ability to assess language disorders via telerehabilitation. *Aphasiology*, 23(5), 627-642. doi: 10.1080/02687030801909659
9. Ward, E., Crombie, J., Trickey, M., Hill, A., Theodoros, D., & Russell, T. (2009). Assessment of communication and swallowing post-laryngectomy: a telerehabilitation trial. *Journal of Telemedicine and Telecare*, 15(5), 232-237. doi: 10.1258/jtt.2009.081204
10. Hoffmann, T., Russell, T., Thompson, L., Vincent, A., & Nelson, M. (2008). Using the Internet to assess activities of daily living and hand function in people with Parkinson's disease. *Neurorehabilitation*, 23, 253-261.
11. Bensink, M., Armfield, N., Irving, H., Hallahan, A., Theodoros, D., Russell, T., Barnett, A., Scuffham, P., & Wootton, R. (2008). A pilot study of videotelephone-based support for newly diagnosed paediatric oncology patients and their families. *Journal of Telemedicine and Telecare*, 14,315-321
12. Hoffmann, T., & Russell, T. (2008). Pre-admission orthopaedic occupational therapy home visits conducted using the Internet. *Journal of Telemedicine and Telecare*, 14, 83-87.

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13. Theodoros, D & Russell, T. (2008). Telerehabilitation: Current perspectives. In Lafiti, R. (Ed.). *Current Principles and Practices of Telemedicine and e-Health*. Amsterdam: IOS Publishing.
  14. Theodoros, D., & Russell, T. (2008). Telerehabilitation: Current perspectives. *Studies In Health Technology And Informatics* 131, 191-209.
  15. Theodoros, D. G., Hill, A.J., Russell, T.G., Ward, E.C., & Wootton, R. (2008). Assessing Acquired Language Disorders in Adults via the Internet. *Journal of Telemedicine and e-Health*. 14 (6), pp. 552-9.
  16. Russell, T.G. (In Press). Physical rehabilitation using telemedicine [Editorial]. *Journal of Telemedicine and Telecare*.
  17. Russell, T.G. (2007) Goniometry via the Internet [summary]. *Australian Journal of Physiotherapy*. 53 (2): 136.
  18. Russell, T.G. (2007) Goniometry via the Internet [Commentary]. *Australian Journal of Physiotherapy*, 53 (2): 136.
  19. Hoffmann, T.C., Russell, T.G., Cooke. (2007). Remote measurement via the Internet of upper limb range of motion in people who have had a stroke. *Journal of Telemedicine and Telecare*, 13, 401-405.
  20. Ward, E., White, J., Russell, T., Theodoros, D., Kuhl, M., Nelson, K., Peters, I. (2007). Assessment of communication and swallowing function post laryngectomy: a telerehabilitation trial. *Journal of Telemedicine and Telecare*, 13, Suppl 8, 88-92.
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  22. Theodoros, D.G., Constantinescu, G., Russell, T., Ward, E.C., Wilson, S.J., & Wootton, R. (2006). Treating the speech disorder in Parkinson's Disease online. *Journal of Telemedicine and Telecare*, 12, Suppl 3, 88-91.
  23. Bensink, M., Shergold, J., Lockwood, L., Little, M., Irving, H., Russell, T., et al. (2006). Videophone support for an eight year-old boy undergoing paediatric bone marrow transplantation. *Journal of Telemedicine and Telecare*, (Accepted August 2005)
  24. Hill, A., Theodoros, D., Russell, T., Cahill, L., Ward, E., & Clark, K. (2006). An Internet-based telerehabilitation system for the assessment of motor speech disorders: A pilot study. *American Journal of Speech-Language Pathology*, 15(1): 45-56. Russell, T., Theodoros, D., & Wootton, R. (2006). Assessing the risks of falls in the elderly via low-bandwidth telemedicine, *Journal of Telemedicine and Telecare*, 12, 113-113.
  25. Russell, T. (2004). Establishing the efficacy of telemedicine as a clinical tool for physiotherapists: From systems design to randomised controlled trial., PhD thesis, University of Queensland, Brisbane.
  26. Russell T., Buttrum P., Wootton R., Jull G. (2004). Rehabilitation after total knee replacement via low-bandwidth telemedicine: the patient and therapist experience. *Journal of Telemedicine and Telecare* 2004;10(Suppl. 1):85-87.
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27. Bensink M., Armfield N., Russell T., Irving H., Wootton R. (2004). Paediatric palliative home care with Internet-based video-phones: lessons learnt. *Journal of Telemedicine and Telecare* 2004;10(Suppl. 1):10-13.
  28. Hoffmann T., Russell T., McKenna K. (2004). Producing computer-generated tailored written information for stroke patients and their carers: system development and preliminary evaluation. *International Journal of Medical Informatics* 2004;73(11-12):751-758.
  29. Russell T., Buttrum P., Wootton R., Jull G. (2003). Low bandwidth physical rehabilitation for patients who have undergone total knee replacement: preliminary results. *Journal of Telemedicine and Telecare* 2003;9(Suppl. 2):44-47.
  30. Russell T, Jull G, Wootton R. (2003). Can the Internet be used as a medium to evaluate knee angle? *Manual Therapy* 2003;8(4):242-246.
  31. Theodoros D, Russell T, Hill A, Cahill L, Clarke K. (2003). Assessment of motor speech disorders online: A pilot study. *Journal of Telemedicine and Telecare* 9 (Suppl. 2):66-68.
  32. Russell T., Wootton R., Jull G. (2003). Low bandwidth physical rehabilitation via the Internet. *Journal of Telemedicine and Telecare* 9(Suppl. 2):88-89.
  33. Russell T., Wootton R., Jull G. (2003). The diagnostic reliability of Internet-based observational kinematic gait analysis. *Journal of Telemedicine and Telecare* 9(Suppl. 2):48-51.
  34. Russell T, Wootton R, Jull G. (2002). Physical outcome measurements via the Internet: reliability at two Internet speeds. *Journal of Telemedicine and Telecare* 8(Suppl. 3):50-52.